AMENDMENTS TO THE CLAIMS

CLAIM 1 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a crank axle mounting hole around a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member supported coaxial with the rotational axis and including:

a first abutment facing a forward rotational direction of the crank arm; and

a first sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm; and

wherein the drive member is not used to couple sprockets to the crank arm.

CLAIM 2 (ORIGINAL): The drive mechanism according to claim 1 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm.

CLAIM 3 (WITHDRAWN): The drive mechanism according to claim 1 wherein the first sloped surface has an arcuate shape.

CLAIM 4 (ORIGINAL): The drive mechanism according to claim 1 wherein the drive member is coaxial with the rotational axis.

CLAIM 5 (WITHDRAWN): The drive mechanism according to claim 1 wherein the drive member is one-piece with the crank arm.

CLAIM 6 (ORIGINAL): The drive mechanism according to claim 1 wherein the drive member comprises an annular drive ring mounted around the rotational axis.

CLAIM 7 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member comprising an annular drive ring mounted around the rotational axis and including:

a first abutment facing a forward rotational direction of the crank arm; and

a first sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm;

wherein an inner peripheral surface of the drive ring includes a plurality of drive ring splines, and wherein an outer peripheral surface of the crank arm includes a plurality of crank arm splines that engage the plurality of drive ring splines; and

wherein the drive member is not used to couple sprockets to the crank arm.

CLAIM 8 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 1 wherein the drive member includes:

a second abutment facing the forward rotational direction of the crank arm; and

a second sloped surface facing the rearward rotational direction of the crank arm.

CLAIM 9 (ORIGINAL): The drive mechanism according to claim 8 wherein the first abutment is located substantially 180° from the second abutment.

CLAIM 10 (ORIGINAL): The drive mechanism according to claim 9 wherein the drive member is coaxial with the rotational axis.

CLAIM 11 (WITHDRAWN): The drive mechanism according to claim 10 wherein the drive member is one-piece with the crank arm.

CLAIM 12 (WITHDRAWN): The drive mechanism according to claim 11 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm, and wherein the second abutment is substantially perpendicular to an outer peripheral surface of the crank arm.

CLAIM 13 (WITHDRAWN): The drive mechanism according to claim 12 wherein the first sloped surface has an arcuate shape, and wherein the second sloped surface has an arcuate shape.

CLAIM 14 (ORIGINAL): The drive mechanism according to claim 10 wherein the drive member comprises an annular drive ring mounted around the rotational axis.

CLAIM 15 (ORIGINAL): The drive mechanism according to claim 14 wherein the first abutment is substantially perpendicular to an outer peripheral surface of the crank arm, and wherein the second abutment is substantially perpendicular to an outer peripheral surface of the crank arm.

CLAIM 16 (WITHDRAWN): The drive mechanism according to claim 15 wherein the first sloped surface has an arcuate shape, and wherein the second sloped surface has an arcuate shape.

CLAIM 17 (WITHDRAWN): The drive mechanism according to claim 16 wherein an inner peripheral surface of the drive ring includes a plurality of drive ring splines, and wherein an outer peripheral surface of the crank arm includes a plurality of crank arm splines that engage the plurality of drive ring splines.

CLAIM 18 (WITHDRAWN): The drive mechanism according to claim 1 wherein the crank arm is a left-side crank arm.

CLAIM 19 (ORIGINAL): The drive mechanism according to claim 1 wherein the crank arm is a right-side crank arm.

CLAIM 20 (ORIGINAL): The drive mechanism according to claim 1 wherein the rotational axis is disposed at a first end of the crank arm, and further comprising a pedal mounting hole disposed at an opposite second end of the crank arm.

CLAIM 21 (ORIGINAL): The drive mechanism according to claim 1 wherein the crank arm includes a sprocket mounting member for mounting a sprocket to the crank arm.

CLAIM 22 (ORIGINAL): The drive mechanism according to claim 21 wherein the sprocket mounting member comprises four sprocket mounting arms.

CLAIM 23 (ORIGINAL): The drive mechanism according to claim 21 further comprising:

a large diameter sprocket retained to the sprocket mounting member; and

a small diameter sprocket retained to the sprocket mounting member.

CLAIM 24 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

wherein the crank arm includes a sprocket mounting member for mounting a sprocket to the crank arm;

a large diameter sprocket retained to the sprocket mounting member;

a small diameter sprocket retained to the sprocket mounting member;

a drive member including:

an abutment facing a forward rotational direction of the crank arm; and

a sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm;

wherein the large diameter sprocket includes a shift assist mechanism for assisting travel of a chain between the small diameter sprocket and the large diameter sprocket; and

wherein the drive member is not used to couple either the large diameter sprocket or the small diameter sprocket to the crank arm.

CLAIM 25 (ORIGINAL): The drive mechanism according to claim 24 wherein the shift assist mechanism comprises a chain support member disposed on a side surface of the large diameter sprocket facing the small diameter sprocket.

CLAIM 26 (WITHDRAWN): The drive mechanism according to claim 23 wherein a first plane containing an inner side surface of the drive member is disposed laterally inwardly from an inner side surface of the small diameter sprocket.

CLAIM 27 (WITHDRAWN): The drive mechanism according to claim 26 wherein a second plane containing an outer side surface of the drive member is disposed laterally inwardly from the inner side surface of the small diameter sprocket.

CLAIM 28 (WITHDRAWN): The drive mechanism according to claim 1 further comprising a dust seal disposed along a circumferential surface of the crank arm.

CLAIM 29 (WITHDRAWN): The drive mechanism according to claim 1 wherein an inner side surface of the crank arm includes a groove.

CLAIM 30 (WITHDRAWN): The drive mechanism according to claim 29 wherein the groove is an annular groove.

CLAIM 31 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member including:

an abutment facing a forward rotational direction of the crank arm; and

a sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm;

wherein the drive member is not used to couple sprockets to the crank arm; and

wherein the crank arm has a crank axle mounting hole, and further comprising a plurality of splines disposed in the crank axle mounting hole.

CLAIM 32 (CURRENTLY AMENDED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a crank axle mounting hole around a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member supported coaxial with the rotational axis and including:

a first abutment facing a forward rotational direction of the crank arm; and

a first sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm;

wherein the drive member is not used to couple sprockets to the crank arm; and

wherein an outer peripheral surface of the drive member at a location of intersection with a radially inner portion of the first abutment extends at a substantially constant radius of curvature for more than 20°.

CLAIM 33 (WITHDRAWN): The drive mechanism according to claim 1 wherein the crank arm has a crank axle mounting hole and a plurality of splines disposed in the crank axle mounting hole, and wherein a plane containing an inner side surface of the drive member is disposed laterally inwardly from laterally inner ends of the plurality of splines.

CLAIM 34 (WITHDRAWN): The drive mechanism according to claim 33 wherein the plane is disposed at least 5 millimeters laterally inwardly from the laterally inner ends of the plurality of splines.

CLAIM 35 (CURRENTLY AMENDED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a bicycle crank arm having a crank axle mounting boss including a crank axle mounting hole and a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

only two abutments disposed on an outer surface of the crank axle mounting boss and facing a forward rotational direction of the crank arm;

wherein the two abutments rotate coaxially around the rotational axis; and

wherein the two abutments are not used to couple sprockets to the crank arm.

CLAIM 36 (CURRENTLY AMENDED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a bicycle crank arm having a crank axle mounting boss including a crank axle mounting hole and a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member disposed at the crank axle mounting boss and including:

an outer peripheral surface;

wherein an abutment is disposed on the outer peripheral surface and faces a forward rotational direction of the crank arm;

wherein the abutment rotates around the rotational axis at a substantially constant radius; and

wherein the outer peripheral surface at a location of intersection with a radially inner portion of the abutment extends convex for at least 20°; and

wherein the drive member is not used to couple sprockets to the crank arm.

CLAIM 37 (CANCELED).

CLAIM 38 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member nonrotatably fixed to the crank arm including:

an abutment facing a forward rotational direction of the crank arm;

wherein the abutment rotates around the rotational axis at a substantially constant radius; and

a sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction of the crank arm; and

wherein the drive member is not used to couple sprockets to the crank arm.

CLAIM 39 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 1 wherein the first abutment extends radially outwardly from a radially outermost surface of the crank arm.

CLAIM 40 (CANCELED).

CLAIM 41 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 1 wherein the first abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 42 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 7 wherein the first abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 43 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 24 wherein the abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 44 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 31 wherein the abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 45 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 35 wherein each abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 46 (PREVIOUSLY PRESENTED): The drive mechanism according to claim 38 wherein the abutment has a free space in front of it sufficient so that the abutment can engage a coupling member of the assist mechanism.

CLAIM 47 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a crank axle mounting hole around a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a drive member nonrotatably fixed to the crank arm, wherein the drive member includes an abutment facing a forward rotational direction of the crank arm for engaging a coupling member of the assist mechanism;

wherein the abutment rotates around the rotational axis at a substantially constant radius; and

wherein the drive member is not used to couple sprockets to the crank arm.

CLAIM 48 (PREVIOUSLY PRESENTED): A drive mechanism for a bicycle transmission assist mechanism comprising:

a crank arm having a crank axle mounting hole around a rotational axis;

wherein the crank arm does not form part of a crank axle dimensioned to extend into a bottom bracket shell of the bicycle;

a sprocket mounting member retained to the crank arm;

a large diameter sprocket retained to the sprocket mounting member;

a small diameter sprocket retained to the sprocket mounting member;

a drive member nonrotatably retained to the crank arm, wherein the drive member includes an abutment facing a forward rotational direction of the crank arm for engaging a coupling member of the assist mechanism;

wherein the drive member is not used to couple sprockets to the crank arm;

wherein the abutment rotates around the rotational axis at a substantially constant radius; and

wherein the abutment is visible when the drive member is viewed in a direction along the rotational axis laterally inwardly of the sprocket mounting member.